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## **EXECUTIVE SUMMARY**



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## Proposed Action and Purpose and Need

The Bureau of Land Management (BLM), an agency of the U.S. Department of the Interior (USDI), administers vegetation on nearly 261 million acres (public lands) in 17 states in the western U.S., including Alaska. Management and control of vegetation on public lands for resource and habitat enhancement is an important function of this agency, including management to reduce the risk of wildfires to people and their property.

The BLM is proposing to treat vegetation on approximately 932,000 acres annually in 17 western states in the U.S., including Alaska, using 14 currently-approved and four new herbicide active ingredients. At present, the BLM treats about 300,000 acres annually using 20 approved herbicides. The proposed action would reduce the risk of catastrophic wildfires by reducing hazardous fuels, restoring fire-damaged lands, and improving ecosystem health by 1) controlling weeds and invasive species; and 2) manipulating vegetation to benefit fish and wildlife habitat, improve riparian and wetlands areas, and improve water quality in priority watersheds.

In recent years, the severity and intensity of wildfires in the West has increased dramatically from levels in the 1970s and 1980s, to a million or more acres annually. Changes in the vegetation on public lands have resulted in increases in hazardous flammable fuels.

Much of the increase in hazardous fuels can be attributed to fire exclusion policies over the past 100 years. Contributors to the change include intermittent and long-term drought over the past 40 years and an increase in the spread of noxious weeds species and invasive vegetation.

Invasive vegetation and noxious weeds are the dominant vegetation on an estimated 35 million acres of public lands. The estimated rate of weed spread on western public lands in 1996 was 2,300 acres per day. Invasive vegetation and noxious weeds degrade or reduce soil productivity, water quality and quantity, native plant communities, wildlife habitat, wilderness values, recreational opportunities, and livestock

forage, and are detrimental to the agriculture and commerce of the U.S. and to public health. Weed infestations can become permanent if left untreated.

In response to the threats of wildfire and invasive vegetation and noxious weeds, the President and Congress have directed the USDI and BLM, through implementation of the *National Fire Plan*, and the *Healthy Forests Restoration Act of 2003*, to take more aggressive actions to reduce catastrophic wildfire risk on public lands. The actions would be taken to protect life and property, and to manage vegetation in a manner that provides for long-term economic sustainability of local communities, improved habitat and vegetation conditions for fish and wildlife, and other public land uses.

The BLM last assessed its use of vegetation treatment methods during the late 1980s and early 1990s, by preparing Environmental Impact Statements (EISs) and Record of Decisions (RODs) that covered vegetation treatment activities in 14 western states in the continental U.S. These EISs evaluated the environmental impacts associated with vegetation control and modification from the use of herbicides, in addition to other treatment methods—manual, mechanical, and biological control methods, and use of fire—on approximately 500,000 acres of public lands a year in the western U.S. The EISs also evaluated the human health and non-target species risks of using 20 herbicide active ingredients on these public lands.

This *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS* (PEIS) has two primary objectives:

- Determine which herbicide active ingredients are available for use on public lands in the western U.S., including Alaska, to improve the agency's ability to control hazardous fuels and unwanted vegetation. In addition to the herbicides currently approved for use, additional active ingredients are being considered for use by the BLM in order to address emerging weed problems associated with public lands, such as downy brome (cheatgrass) and invasive aquatic species.

- In consultation with the U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration National Marine Fisheries Service, develop a state-of-the-science human health and ecological risk assessment (ERA) methodology. This methodology would serve as the initial standard for assessing human health and ecological risk for herbicides that may become available for use in the future.

The BLM has also prepared a *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (PER) describing the environmental impacts of using non-herbicide vegetation treatment methods on public lands. Limiting analysis in the PEIS to the use of herbicides, while analyzing other treatment methods in the PER, was done because the primary issue of controversy identified through scoping, and which required National Environmental Policy Act (NEPA) review, was the BLM's continuing and proposed increase in the use of herbicides in vegetation treatment programs needed to implement the *National Fire Plan* and related initiatives. The use of herbicides has been affirmed as a central issue for analysis in all past EISs considered in this document. The use of the other non-herbicide techniques in an integrated pest management approach has also been affirmed in all previous EIS Records of Decision, and the BLM is not proposing to make any decisions relative to the use of non-herbicide vegetation treatment methods.

## Alternative Proposals

Five program alternatives were developed for and evaluated in this PEIS, including the Preferred Alternative and the No Action Alternative. Alternative actions were developed that 1) allow the BLM to continue its current use of 20 active ingredients in 14 western states, as authorized by earlier EIS RODs; 2) allow for the use of 14 active ingredients currently used by the BLM and four new active ingredients; 3) prohibit the use of herbicides; 4) prohibit the aerial application of herbicides; or 5) prohibit the use of sulfonyleurea and other acetolactate synthase-inhibiting active ingredients. These program alternatives address many of the concerns raised during scoping, in particular the public's desire to see alternatives that place less emphasis on the use of herbicides, while still meeting the program's purpose and need. Alternatives

were also developed to ensure that the BLM complied with federal, tribal, state, and local regulations.

### Alternative A – Continue Present Herbicide Use (No Action Alternative)

Under this alternative, the BLM would be able to continue to use 20 active ingredients approved for use in 14 western states under the earlier EIS RODs for each state. The BLM would also continue activities conducted under burned area emergency stabilization and rehabilitation and hazardous fuel reduction that are evaluated by NEPA compliance documents prepared by local BLM field offices. Under this alternative, an estimated 305,000 acres would be treated annually using herbicides.

### Alternative B - Expand Herbicide Use and Allow for Use of New Herbicides in 17 Western States (Preferred Alternative)

This alternative represents the treatment of vegetation using herbicides in 17 western states, including Alaska, Nebraska, and Texas, states that were not included in the earlier EIS assessments. Under the Preferred Alternative, approximately 932,000 acres would be treated annually using herbicides, based on the herbicide use projections developed by BLM field offices. Based on these projections, the majority of treatments would occur in Nevada, Idaho, Oregon, and Wyoming.

Under the Preferred Alternative, the BLM would be able to use, in the western U.S., including Alaska, 14 active ingredients that were approved for use in the earlier RODs and for which an analysis of risks to humans and non-target plants and animals was conducted for this PEIS or by the U.S. Department of Agriculture Forest Service (Forest Service). These active ingredients are 2,4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr. The remaining six active ingredients currently approved for use by the BLM—2,4-DP, asulam, atrazine, fosamine, mefluidide, and simazine—have not been used by the BLM for several years, or their use has been limited to a very small number of acres. Although the risks to humans from the use of these chemicals are not significant based on evaluations done for the earlier EISs and a review of the literature for this PEIS, the

risks to non-target plants and animals, especially species of concern, have not been adequately evaluated. Under this alternative, their use would be discontinued. Should these chemicals be needed by the BLM in the future, the BLM would consult ERAs, if available, or conduct their own ERAs, to assess the risks to non-target and sensitive species. This analysis would be supported by the appropriate NEPA documentation and interagency consultation before these chemicals would be approved for use or applied on the ground.

The BLM would approve four additional active ingredients for use in all 17 states included in this PEIS: imazapic, diquat, diflufenzopyr (in formulation with dicamba), and fluridone. In addition, the BLM would approve diflufenzopyr for use in the future as a stand-alone active ingredient if it becomes registered for herbicidal use. These active ingredients and formulations could only be applied for uses, and at application rates, specified on the label directions.

Under the Preferred Alternative, the BLM proposes to use new active ingredients that are developed in the future if: 1) they are registered by the USEPA for use on one or more land types (e.g., rangeland, aquatic) managed by the BLM; 2) the BLM determines that the benefits of use on public lands outweigh the risks to human health and the environment; and 3) they meet evaluation criteria to ensure that the decision to use the active ingredient is supported by scientific evaluation through human health and ecological risk assessments and NEPA documentation.

### **Alternative C - No Use of Herbicides**

Under Alternative C, the BLM would not treat vegetation using herbicides and would not use new chemicals that are developed in the future. The BLM would continue to treat vegetation using fire, and mechanical, manual, and biological control methods. A PER has been prepared that accompanies this PEIS and discusses these treatment methods, proposed treatment levels during the next 10 to 15 years, and likely impacts to natural and social resources on public lands from these treatment methods.

### **Alternative D - No Aerial Applications**

This alternative is similar to the Preferred Alternative in that it represents the treatment of vegetation using herbicides in 17 western states, including Alaska, Nebraska, and Texas, and use of the same active

ingredients as allowed under the Preferred Alternative. Under Alternative D, however, only ground-based techniques would be used to apply herbicides and no aerial applications of herbicides would be allowed, which would reduce the risk of spray drift impacting non-target areas. Based on information obtained from field offices, an estimated 55% of herbicide treatments would occur using ground-based methods during the next 10 years. Thus, the BLM would treat approximately 530,000 acres annually using herbicides under this alternative. In comparison, during 1997 to 2005, approximately 66% of herbicide treatments were conducted aerially and 34% using ground-based methods.

Similar to the Preferred Alternative, the BLM would use new active ingredients developed in the future if they followed protocols for use of new active ingredients identified under the Preferred Alternative.

### **Alternative E - No Use of Acetolactate Synthase-inhibiting Herbicides**

This alternative was developed based on an alternative proposal for vegetation management on public lands submitted by the American Lands Alliance, an alliance of several environmental and conservation groups.

Under Alternative E, the BLM would not use sulfonylurea and other acetolactate synthase-inhibiting active ingredients approved in the earlier RODs, which are chlorsulfuron, imazapyr, metsulfuron methyl, and sulfometuron methyl. During 1999 to 2000, these active ingredients comprised approximately 28% of the active ingredients used by the BLM. Since 2001, however, these active ingredients have comprised approximately 8% of the active ingredients used by the BLM. The BLM would be able to use 10 active ingredients in the 17 western states that were approved for use in the earlier RODs and for which an analysis of risks to humans and non-target plants and animals was conducted for this PEIS. These active ingredients are: 2,4-D, bromacil, clopyralid, dicamba, diuron, glyphosate, hexazinone, picloram, tebuthiuron, and triclopyr. The six other active ingredients currently approved for use by the BLM—2,4-DP, atrazine, asulam, fosamine, mefluidide, and simazine—would not be used unless guidelines given for the Preferred Alternative were met.

The BLM would be allowed to use three additional active ingredients in all 17 states: diquat, diflufenzopyr (if it becomes registered for herbicidal use), and

fluridone. In addition, the BLM would be able to use a formulation of diflufenzopyr and dicamba. These active ingredients and formulations could only be applied for uses, and at application rates, specified on the label directions. Under Alternative E, the BLM would use new active ingredients developed in the future if they followed protocols for use of new active ingredients identified under the Preferred Alternative and did not contain sulfonylurea and imidazolinone chemistry and other acetolactate synthase-inhibiting compounds.

Under this alternative, the BLM would treat approximately 466,000 acres annually using herbicides. Spot herbicide treatments would be favored over broadcast treatments. Herbicides use would be discouraged in areas populated by amphibians. To protect Native American and Alaska Native resources, the BLM would establish herbicide-free zones around culturally significant plant and wildlife resources. This alternative would place greater emphasis on passive restoration than the other alternatives.

### Summary of Impacts

The direct and indirect effects of herbicide treatment alternatives on natural and socioeconomic resources are evaluated in this PEIS. The cumulative effects that result from the incremental impact of treatment actions when added to the effects of other past, present, and reasonably foreseeable future actions are also evaluated for herbicide and non-herbicide treatments. Standard operating procedures would be used to reduce impacts, and mitigation measures have been proposed to reduce significant adverse impacts to more reasonable levels.

### Direct and Indirect Impacts

In general, potential direct and indirect adverse impacts and benefits would be greatest under the Preferred Alternative and least under Alternative C. Fewer acres would be treated, or treatments would not be conducted aerially, under the other herbicide treatment alternatives, so risks and benefits would be intermediate between the Preferred Alternative and Alternative C.

Impacts from herbicide treatments on local and regional air quality would be minor for all alternatives. Pollutant emissions would be greater under Alternative D than the Preferred Alternative, even though 40% fewer acres would be treated under Alternative D,

because of the large number of acres treated using ground-based application methods under Alternative D. None of the treatments would result in emissions that exceed Prevention of Significant Deterioration thresholds or National Ambient Air Quality Standards.

None of the herbicides commonly used by the BLM appear to result in adverse impacts to soil. Treatments would benefit soil by restoring natural fire regimes and slowing the spread of weeds, which should reduce soil erosion and improve soil productivity. New herbicides proposed for use have little adverse impact on soil.

Several herbicides used, or proposed for use by the BLM, are known groundwater contaminants. Effects to surface water would be minor, and herbicide concentrations in surface water should not exceed safe levels for human health. Herbicide use would improve watershed function and water quality, since many treatments would be targeted at watersheds where water quality does not meet state or tribal standards. Adverse and beneficial impacts of alternatives would primarily be related to number of acres treated. Water quality would not be impacted by herbicides under Alternative C, but land health would deteriorate more rapidly than under the other herbicide treatment alternatives because herbicides could not be used to control weeds and other vegetation.

Herbicides pose risks to terrestrial and aquatic vegetation. Most aquatic herbicides, and several terrestrial herbicides, are non-selective and could adversely impact non-target vegetation. Accidental spills and herbicide drift from treatment areas could be particularly damaging to non-target vegetation, including croplands and other vegetation found on privately-owned lands near treatment areas. Herbicides would help to control aquatic vegetation that chokes waterways and impacts wetland function and values. Upland and riparian area treatments could control weeds and other vegetation to reduce soil erosion and reduce the risk of catastrophic fire. Risks to upland, wetland, and riparian vegetation from proposed herbicides would be similar to, or less than, risks from currently-available herbicides. Adverse impacts from herbicides to terrestrial and aquatic vegetation would be least under Alternative C, while benefits would be greatest under the Preferred Alternative. Buffer zones would be used to reduce the risks to vegetation from herbicide treatments under all alternatives proposing herbicide use.

Many of the herbicides currently available for use by the BLM pose risks to fish and wildlife. Accidental

spills and direct spraying of aquatic organisms could kill or harm animals, or affect the health and behavior of animals. Fish and wildlife could also forage on vegetation that has been treated, or prey on other animals that have been exposed to herbicides, and be harmed. All of the herbicides pose some risk to non-target terrestrial and aquatic vegetation, and damage to these plants could adversely impact habitats used by fish and wildlife. Acetolactate synthase-inhibiting herbicides are highly potent and can damage plants at low application rates, but do not appear to create unnecessary risks to aquatic organisms or wildlife. Of the new herbicides proposed for use, diquat poses a low to high risk to aquatic organisms and wildlife, depending on application rate and receptor scenario; fluridone, imazapic, and Overdrive<sup>®</sup> (a formulation of dicamba and diflufenzopyr) pose little or no risk to aquatic organisms and wildlife. The risk for adverse health effects to individual organisms would typically be greater for threatened, endangered, and other special status species than for secure species, depending on the herbicide and the exposure pathway. Furthermore, the risk for associated population- and species-level effects would be much greater for many TES species, given their low numbers and fragmented habitats. Buffers would be used between treatment areas and aquatic habitats to reduce risks to aquatic organisms. Buffers would also be used between treatment areas and habitats of special status species.

Livestock and wild horses and burros could be impacted by herbicides from an accidental spill, direct spray, herbicide drift, or by consuming herbicide-treated vegetation. Effects to animals could include death, damage to vital organs, decrease in growth, decrease in reproductive output and condition of offspring, and increased susceptibility to predation. However, most herbicides currently available for use by the BLM pose little or no risk to these animals. Of the new herbicides proposed for use, only diquat is fairly toxic to livestock and wild horses and burros. However, it would be used by the BLM as an aquatic herbicide, and frequent exposure to these animals would be unlikely. Risks from exposure to herbicides for livestock would be further reduced by restrictions placed on livestock use of treated areas as directed on herbicide labels.

While herbicide treatments could affect cultural or paleontological resources near or on the surface, they would be more likely to affect traditional cultural practices of gathering plants and the health of Native peoples. Cultural and paleontological resources could

be impacted by equipment, and to a lesser extent, by the chemicals in herbicides. A risk assessment was conducted to assess the risks to Native peoples from harvesting plants that could be treated with herbicides, or from direct exposure to herbicide spray. Native peoples would face risks when picking berries in areas treated with diquat. They could also face risks when consuming fish contaminated with 2,4-D, hexazinone, or picloram. Native peoples would face risk from diquat or fluridone if these chemicals were accidentally spilled or used at maximum application rates.

Herbicide treatments could affect visual, wilderness, and recreation resources. Treatments would remove and discolor vegetation, making it less visually appealing. Over the long term, landscapes should be more appealing as native vegetation was restored. Treatments in wilderness and other special areas would detract from the “naturalness” of the area. Although use of mechanical equipment would be strongly discouraged in these areas, its use would create noise and reduce the wilderness experience. Recreationists could be exposed to herbicides, experience less visually-appealing landscapes, or find fish and game less plentiful as a result of treatments. In addition, recreational areas could be closed for short periods of time after application to ensure treatment success and protect the health of visitors.

Social effects would be minor at the scale addressed in the PEIS. There would be benefits to communities that supply workers, materials, or services in support of treatment activities. Some businesses, such as recreation-based businesses and ranching operations, could be adversely affected if treatments closed areas used for recreation or by domestic livestock. There are potential environmental justice concerns because a large number of Native peoples and other minority groups live in the West and work in industries (e.g., forest products, herbicide applicator) or conduct activities (e.g., gathering of plants for traditional uses, recreation) that could potentially expose these groups to treated areas.

A human health risk assessment was conducted to assess risks to humans from the use of herbicides. At typical application rates, workers would not be at risk from use of herbicides except when using diquat, 2,4-D, 2,4-DP, atrazine, bromacil, diuron, fosamine, hexazinone, mefluidide, simazine, or tebuthiuron. At maximum application rates, there are also risks associated with the use of chlorsulfuron, fluridone, and triclopyr. Public receptors would be at less risk. The

BLM would not use 2,4-DP, atrazine, fosamine, mefluidide, or simazine under the action alternatives. Except for diquat, new herbicides proposed for use pose few or no risks to workers or the public. To reduce risks from diquat, treatments would occur away from high residential and subsistence use areas.

### Cumulative Impacts

Treatments would contribute only minor amounts of pollutants to the air. Fire use would increase particulate matter in the air, but the amount of pollutants generated by fire use, and their effects on human health, should be less than those from wildfire, resulting in fewer pollutants accumulating than would occur without treatments. Treatments would lead to cumulative loss of soil from removal of vegetation and erosion, but improvement in vegetative quality should slow soil loss on public lands. Erosion has led to poor water quality on portions of public lands. Treatments that slow erosion would also benefit water quality and slow the cumulative loss of water quality. Over half of the wetlands in the U.S. have been lost since settlement by Europeans. Treatments would improve wetland and riparian area functions and values and slow erosion, which contributes to wetland degradation on public lands. With improvement in these areas, habitat for fish and other aquatic organisms would also improve. However, many anadromous fish spend part or most of their lives off of public lands, and thus would potentially have to cope with poorer quality habitat while off of public land.

Fire exclusion and the spread of weeds have degraded vegetation function and quality on public land and have led to a cumulative loss of vegetative productivity. Treatments would restore ecosystem processes and slow this loss. Improvement in vegetation characteristics would benefit wildlife. Some species that have adapted to degraded ecosystems could lose habitat as native vegetation was restored, but most species would benefit. Factors that have led to the loss of native vegetation and ecosystem health have adversely impacted rangelands used by domestic livestock and wild horses and burros. Treatments should improve rangelands for these animals, and ensure that public lands can support viable populations of wild horses and burros and a healthy ranching industry.

Treatments could add to the cumulative loss of paleontological and cultural resources, but risks would be low. Treatments could impact plants used by Native peoples for traditional lifeway uses, and the health of Native peoples. However, the BLM would use herbicides that are generally safe for use around people, and would conduct pre-treatment surveys to identify areas of cultural concern before conducting treatments to reduce the cumulative loss of these values.

Treatments would result in some short-term and temporary loss of visual, recreational, and wilderness and other special area values due to vegetation being killed or discolored. In some cases, areas might be closed to visitors during and after treatments; however, these impacts would be short-term and any values affected would be restored within two growing seasons in most cases.

Treatments would benefit local communities by providing jobs and income, and by reducing the risk of catastrophic wildfire that could harm people and destroy property. These gains would be minor in the context of the western economy, but would still be a cumulative benefit for many rural communities.

Treatments could harm the health of workers and the public. Most herbicides, however, would pose few risks to workers, and even fewer risks to the public, when applied at the typical application rate. New herbicides proposed for use pose few or no risks, except for diquat. If treatments restored natural fire regimes, reduced the risk of catastrophic fire, and slowed the spread of weeds, human health would benefit.

Treatments could result in short-term loss of some resources, including soil, vegetation, wildlife, and livestock forage opportunities. Over the long term, loss of resource values would be slowed, and in some cases, would be reversed. Short-term losses in resource functions would be compensated for by long-term gains in ecosystem health.